

NAVAL MEDICAL RESEARCH AND DEVELOPMENT News

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Navy Medicine Joins Fort Detrick, Frederick in Community Covenant



Front row, from left: Maj. Gen. James Gilman, U.S. Army, Commanding General, U.S. Army Medical Research and Materiel Command; Ms. Anna Winegar, President, Fort Detrick Alliance; Ms. Jan Gardner, President, Frederick, County Board of Commissioners; Rear Adm. Eleanor Valentin, Commander, Navy Medicine Support Command; Col. Judith Robinson, U.S. Army, Garrison Commander, Fort Detrick. Back row, from left: Dr. Stephen Morse, Associate Director for Environmental Microbiology, National Center for Emerging and Zoonotic Infectious Diseases, Centers for Disease Control and Prevention, Department of Health and Human Services; Mr. James Johnson, Director, Office of National Labs, Department of Homeland Security; Mr. Randy McClement, Mayor, City of Frederick.

Officials from Navy Medicine joined others from Fort Detrick to affirm their commitment to the City of Frederick, Frederick County and the surrounding communities in Maryland in signing a Community Covenant along with city representatives. While the Community Covenant is an Army program, it extends to the other military services as well. This year the August 22 event at Baker Park in Frederick, Md.

included representatives from Navy Medicine and other federal and civilian partners who currently work at or will be moving to Fort Detrick.

"Biological research represents the present and the future of Fort Detrick. While Fort Detrick remains an Army installation, it is clearly a whole lot more," said Maj. Gen. James K. Gilman, U.S. Army, Commanding General, U.S. Army Medical Research

and Materiel Command, guest speaker at the event. He went on to say that the interagency partnerships formed by the group of senior leaders represented at the event, in conjunction with the traditional Army presence, are paving new roads in the government approach to big problems that face our country.

The signing event brought together the Executive Steering Committee members of the National Interagency Confederation for Biological Research, which includes Rear Adm. Eleanor V. Valentin, Commander, Navy Medicine Support Command, who attended the event along with others from the Naval Medical Research Center. The other agencies represented included the National Cancer Institute, National Institute of Allergy and Infectious Diseases, U.S. Department of Agriculture, Department of Homeland Security, and the Centers for Disease Control and Prevention. This group represents the enhanced public health and biodefense cooperative research that is coming together at Fort Detrick.

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NMRC in the news

Pentagon Channel interviews DoD research team



Dengue fever – Recent reports of Dengue Fever in Florida have raised concern about possible resurgence of the disease. DoD scientists are developing a vaccine. [View the video.](#)

Commanding Officer's Message

Greetings,

Our efforts are clearly supporting today's deployed warfighters and at the same time we are looking to the readiness and well-being of future forces. The Navy's medical research and development labs are engaged in a broad spectrum of activity from basic science in the laboratory to field studies at sites in remote areas of the world and in operational environments. This issue of the newsletter showcases the variety and depth of biomedical research we are engaged in, from malaria vaccine development to designing spatial disorientation training techniques, from sand fly studies and control in Libya to casualty medical information exchange to enhance combat vehicle design.

For nearly a decade, the Millennium Cohort Study has been collecting data to investigate military occupational exposures, including deployments, and to determine potential association with long-term health outcomes. The Millennium Cohort Family Study, launched this year, is the first study to use a large cohort to evaluate the impact of military service and deployment on families.

Primarily, we focus our research on operational medicine and readiness, but through our partnerships with other government and civilian agencies, industry and academia, and the Ministries of Health in developing countries, we share our technology and knowledge and we touch the lives of people around the world. We are living our mission - to conduct health and medical research, development, testing, evaluation, and surveillance to enhance the operational readiness performance of Department of Defense personnel worldwide.



Commanding Officer sends,
Richard L. Haberberger, Jr.
CAPT, MSC, USN

Navy Participates in Undersea Human Systems Integration Symposium

By Lt. jg. Sonya Nash, NSMRL Public Affairs

Research personnel from the Naval Submarine Medical Research Laboratory ([NSMRL](#)) at Submarine Base New London in Groton, Conn. led a panel discussion at the 2010 Undersea Human Systems Integration Symposium. The symposium was hosted in Providence, R.I. by the American Society of Naval Engineers. The goal of the symposium this year was to "share knowledge, experience, and lessons learned and to highlight the cohesive relationship between the systems engineering and human systems integration (HSI) processes in the development of technologies to support the warfighter."

NSMRL was well-suited to participate in the symposium, whose theme for 2010 was "Getting the Best through Warfighter System Integration." The panel was moderated by Jerry Lamb, Ph.D. and included Lt. Matthew Keller; Capt. Ron Steed (Ret.); Thomas Santoro, Ph.D.; Robert Astur, PhD; and

Michael Qin, Ph.D. Everyone on the panel has contributed significantly to the growing body of knowledge on submariner health and safety.

Keller's research on watchstander vigilance and sleep patterns focused on the 18-hour living schedule of the submariner, and has demonstrated conclusively that individuals showed better circadian entrainment and sleep efficiency on a 24-hour based schedule.

Steed's research on human performance in maritime mishaps has resulted in a conceptual model of the forces that act to increase the likelihood of a mishap, using the concept of "drift into failure." Steed's model provides a framework for commanding officers and higher levels of command to better evaluate the current dangers and take actions to reduce them before crew drift and opportunity coincide and result in a mishap.

Santoro and the binaural research team, including members from Johns Hopkins Applied Physics Laboratory, have explored the capabilities and

limitations of human auditory perception for sonar HSI. Their innovations include the adaptation of binaural listening over headsets with sound source localization and full 360 degree virtual auditory surround to provide a natural, free-field listening environment and allow for full use of auditory perception.

Virtual reality and virtual worlds are the focus of Astur and Qin. Astur's focus on virtual reality (VR) has launched several projects using VR to improve resilience and optimize performance aboard submarines, including stress inoculation techniques and teaching and modeling effective critical social skills for successful submarine life. Qin's research into virtual worlds includes discussions on minimizing the barrier to using virtual worlds in HSI and the importance of introducing HSI into the design process at an earlier stage.

Together, the panel highlighted the many facets of research conducted by NSMRL that support warfighter health and performance.

San Diego Lab Participates in Information Exchange with NGIC

By Mike Galarneau, Sr. Scientist,
NHRC Medical Modeling and
Simulation Department



The National Ground Intelligence Center (NGIC) held its annual technical information exchange with vehicle developers

from across the Department of Defense (DoD) in Charlottesville, Va. August 27-29. The main purpose of the technical exchange was to provide tactical, injury and vehicle damage assessments to the vehicle developer program managers so that vehicle performance against the insurgency threat can be assessed and improvements to vehicles can be developed.

The Navy's CTR Expeditionary Medical Encounter Database (EMED) program at the Naval Health Research Center (NHRC), San Diego, provides the majority of casualty medical data for each insurgency attack that occurs. NHRC sends the clinical details and injury severity assessments for each casualty to the Joint Trauma Analysis and Prevention of Injury in Combat (JTAPIC) program, which then forwards the data to NGIC. NGIC incorporates the medical data into its event reports

so that vehicle performance can be directly related to the number and injury severity of the casualties.

The NHRC CTR EMED data are directly affecting the development of new vehicle variants as well as incrementally improving existing designs.

The NGIC, located in northern Albemarle County in central Virginia, is a major subordinate command of the U.S. Army Intelligence and Security Command and is the Defense Center of Excellence for ground force production.

It provides scientific and technical intelligence and general military intelligence on foreign ground forces in support of the warfighting commanders, force and material developers, Department of the Army, DoD, and national-level decision makers. The NGIC also manages the Army's Foreign Materiel Exploitation Program and foreign materiel acquisition requirements and constitutes a single authoritative source for comprehensive ground forces threat to the Army and other services.



Members of the CTR Expeditionary Medical Encounter Database team at the Naval Health Research Center, San Diego. Photo by NHRC Public Affairs.

Many Nations Join to Combat Chikungunya in the Americas

Provided by NMRC Public Affairs Office

Chikungunya, which means "that which bends up" in the Makonde language, is a virus spread by the mosquito that causes a febrile illness, similar to Dengue, characterized by severe joint pain. Traditionally, epidemics of chikungunya virus (CHIKV) have displayed cyclical trends with inter-epidemic periods from four to thirty years. Since 2004, CHIKV has expanded its global geographical range, causing sustained epidemics of unprecedented magnitude in Asia and Africa.

On July 21-23, members of the Pan American Health Organization from Washington, D.C. and Peru; the Centers for Disease Control and Prevention – Division of Vector Borne Disease; Ministries of Health from Argentina, Bolivia, Brazil, Canada, Chile, Cuba,

Panama and Peru; Laveran Military Hospital in France; and the U.S. [Naval Medical Research Center Detachment](#) gathered in Lima, Peru to develop a guideline on preparing for the introduction of CHIKV in the Americas.

Sections of this document include epidemiological and clinical aspects of disease, laboratory diagnostics, entomological surveillance, control and communication. This document is intended to be used and adapted by each member country with the main objective of increasing awareness and providing the necessary tools to institute the most appropriate strategies to prevent the importation of CHIKV into the region or control it if introduced.

It is intended to provide guidance on detecting an outbreak of the disease, conducting pertinent epidemiological investigations, and preventing or mitigating the

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Capt. Richie is Research Coordinator for Malaria Vaccine Program

Capt. Thomas Richie, the director of the [Navy's Malaria Program](#), has been appointed the Research Coordinator of the U.S. Military Malaria Vaccine Program (USMMVP), replacing Army Col. Christian Ockenhouse. Richie will serve in this position for up to three years. The USMMVP, a combined Army-Navy research and development initiative, represents the continuation of more than 20 years of research with a focus on creating vaccines, drugs and diagnostics that will eradicate, or at least more effectively control, malaria.

The USMMVP consists of scientists and technicians from the Walter Reed Army Institute of Research and the Naval Medical Research Center, collocated in Silver Spring, Md.

Jointly they are working to develop vaccines to protect military forces against the debilitating infectious disease malaria.

The importance of malaria to the U.S. military was illustrated by the



Capt. Thomas Richie, the recently appointed research coordinator of the U.S. Military Malaria Vaccine Program. Photo by Phil Collins.



mission-altering evacuation of 43 Marines from the West African country of Liberia in 2003. Five of these Marines required intensive care before recovering, and in December 2009, a Seabee also deployed to Liberia died of malaria. U.S. military forces are at great risk of developing malaria while deployed in endemic areas.

A warfighter with malaria can be incapacitated for one to three weeks

and some malaria infections can rapidly become life threatening if not promptly diagnosed and treated. In addition, warfighters can be exposed to more than one malaria species in today's complex military operations. Despite having very effective drugs to treat individuals suffering from malaria, the most cost-effective measure to fight this disease is to develop preventive malaria vaccines.

Many Nations Join to Combat Chikungunya in the Americas

Continued from page 3
expansion of the disease in the Americas.

Although areas in Asia and Africa are considered to be endemic for the disease, the virus has caused outbreaks in many new territories in the Indian Ocean islands and in Italy in 2007. This recent reemergence of CHIKV has changed and heightened the world's public health awareness and concern about this virus.

To date, controlling the spread of arboviruses in the Americas has been extremely difficult despite large vector control and public awareness campaigns.

For example, Dengue continues to ravage many areas of the Americas as far north as the United States and south to Argentina. During the first trimester of 2010, several Dengue virus outbreaks occurred at un-

precedented magnitude in several Central American and Caribbean countries.

Currently, indigenous transmission of CHIKV does not occur in the Pan American Region, but the risk of introduction into local vector mosquito populations now is likely higher than previously observed, especially in tropical and subtropical areas where *Aedes aegypti*, one of the main vectors of CHIKV, has a broad distribution. The broad distribution of competent vectors, in combination with the naivety of the human population for CHIKV in the Americas, places this area at risk for the introduction and spread of the virus. Any large outbreaks would likely tax existing health care systems, public health infrastructure and potentially cripple societal functions.

Navy Scientists Help Libya Study and Control Sand Flies



Dr. Badr Ed Din Annajar (center), Libya's National Center for Infectious Disease Prevention and Control, and a local entomologist watch as Lt. Cmdr. Peter Obenauer (right), Naval Medical Research Unit No. 3, sets up a sand fly light trap.

By Darnell P. Gardner, Jr., Public Affairs Officer, NAMRU-3

U.S. military researchers and Libyan health officials collaborating on *Leishmania* studies by surveying sand flies? Not likely ten years ago, but with renewed U.S.-Libyan relations, the unlikely is now happening.

For the past twenty years, Libya has been plagued with two forms of leishmaniasis, cutaneous and visceral. If infected with the *Leishmania* parasite causing cutaneous disease, boil-type sores often appear on the face, hands, and/or other parts of the body that will eventually heal, but leave an unsightly scar for life. Visceral leishmaniasis, which affects the internal organs, presents signs of high fever, weight loss, and possible death.

"With overwhelming support from the U.S. Department of State and Libya's National Center for Infectious Disease Prevention and Control (NCIDPC), we were able to visit sites of sand fly infestations with hopes of reducing the vector, thereby reducing *Leishmania* transmission," said Lt. Cmdr. Peter Obenauer, Head, Vector Biology Research Program, Naval Medical Research Unit No. 3 ([NAMRU-3](#)).

Known throughout the region as subject matter experts on sand fly biology, identification and control, Obenauer, along with vector biologists Drs. Hanafi Hanafi and Mahmoud Saleh, were sent by NAMRU-3 to assist with efforts to survey and study the sand flies after numerous leishmaniasis cases were confirmed in Taughha, a region on the northern coast of Libya. NAMRU-3 scientists have further confirmed evidence linking *Leishmania* transmission to an increased number

of sand fly bites.

The NAMRU-3 team, accompanied by Dr. Badr Ed Din Annajar, Head, Leishmania Prevention and Control, NCIDPC, travelled to six pre-designated sand fly collection sites. While there, they worked with local entomologists to set up BG (*BIOGENT*) sentinel traps and Centers for Disease Control and Prevention (CDC) light traps, with varying configurations of ultraviolet light and carbon dioxide emitters. In all, over 1,500 sand flies were captured within a couple of days, showing unusually high levels of sand fly activity and trap effectiveness.

"The basis for our surveillance is to determine which factors present suitable breeding environments for sand flies, and eradicate those factors that may contribute to larger sand fly populations," said Obenauer. He added, "We're using global information system and remote sensing software to predict leishmaniasis outbreaks and correlate habitat modifications and sand fly populations with human cases. Once captured, specimens are identified to species at the site and then sent to NAMRU-3 for *Leishmania* testing."

NAMRU-3 will also collaborate with Libya to update their mosquito distribution list. Future studies are anticipated to investigate different techniques to control rodents and sand flies.



NAMRU-3 researchers Lt. Cmdr. Peter Obenauer (left) and Dr. Mahmoud Saleh (second from left) and two local entomologists begin sand fly identification activities.

Visiting Researcher Lectures on TBI Protective Mechanisms

By Richard McCarron, NMRC

On August 27, Dr. Esther Shohami from the Department of Pharmacology, The Hebrew University Institute of Drug Research, Jerusalem, Israel, spoke about endogenous mechanisms for brain protection after traumatic brain injury (TBI) at the [Naval Medical Research Center](#). Her talk primarily focused on the role of the endocannabinoid system and "heat acclimation" preconditioning in recovery after TBI.

TBI represents a major health issue for combat personnel and is the leading cause of death in young individuals. In particular, mild blast-associated TBI (mTBI), which can occur following the discharge of large caliber weapons or when in close proximity to the detonation of improvised explosive devices (IEDs), afflicts a large proportion of troops. Following exposure to a blast or other insult, brain injury is thought to occur via the accumulation of harmful mediators, leading to secondary damage. Simultaneous, however less well appreciated, protective mechanisms are also set in motion. The first part of Dr. Shohami's talk focused on the endocannabinoid (eCB) system and its role in neuroprotection after TBI.

The eCBs, anandamide and 2-

arachidonoyl glycerol (2-AG), are lipid mediators that are synthesized "on-demand" and activate specific receptors, mainly neuronal, presynaptic CB1 receptors. There is an increasing body of evidence to support the notion that the eCB system is neuroprotective. The brain levels of the highly abundant 2-AG are significantly elevated after TBI. When administered to mice after TBI, 2-AG decreases brain edema, blood-brain-barrier disruption, infarct volume and hippocampal cell death and improves functional recovery. Moreover, the increase of nuclear factor-kappa beta activation and of proinflammatory cytokines is abolished. The role of CB1 receptors in mediating these effects was demonstrated using a selective antagonist or CB receptor knockout mice. A different type of receptor (CB2 receptors) is located mostly in the immune system, but is now well recognized on microglia and subpopulations of neurons. CB2 receptors were found to participate in deciding the cell's ultimate fate and play key roles in many aspects of CNS development including neurogenesis, glia formation, migration and lengthening of axons. These receptors may also contribute towards improved functional recovery after TBI.

In addition to the above-mentioned



Dr. Esther Shohami.

functions, endogenous anandamide plays a facilitatory role in memory extinction through a CB1 receptor mechanism of action. This represents a promising pharmacological approach to treat nightmares in patients diagnosed with post-traumatic stress disorder (PTSD). The majority of the treated patients (72 percent) experienced either cessation of nightmares or a significant reduction in their intensity.

The second part of the talk described the beneficial effects achieved by chronic exposure to moderate heat (heat acclimation, HA). HA (30 days at 34° C) is a unique preconditioning (PC) model, which represents a global physiological adaptation and has been shown to induce cross-tolerance against other stressors, including TBI. HA mice show accelerated functional recovery after TBI that is accompanied by reduced secondary brain damage. Levels of key signaling molecules such as HIF1 alpha and pAkt were found to be higher in HA mice as compared to their normothermic controls. Their downstream effectors such as Epc receptor and the anti-apoptotic Bcl-xL are increased while inflammatory cytokines and caspase-3 activity are decreased. Taken together, the present results suggest the cellular/molecular mechanisms may account for the observation that HA affords neuroprotection, and could be utilized to develop therapeutic augmentation of endogenous TBI defense mechanisms.



Dr. Esther Shohami, Department of Pharmacology, The Hebrew University Institute of Drug Research, discusses endogenous mechanisms for brain protection after traumatic brain injury at NMRC. Photos by Dave Miles.

Naval Medical Research Unit-Dayton Activation Slated for October



Progress on NAMRU-Dayton Aerospace Medicine Research Laboratory, WPAFB.

The Naval Medical Research Unit-Dayton (NAMRU-Dayton) activation ceremony will take place onboard Wright Patterson Air Force Base (WPAFB) at 9:00 a.m. Wednesday, October 6, 2010. Capt. Keith Syring, Aerospace Physiology Program Manager and Specialty Leader, will be the first Commanding Officer of Navy Medicine's newest military operational research laboratory. Cmdr. Rita Simmons, currently Officer in Charge of the Naval Aerospace Medical Research Laboratory ([NAMRL](#)), located in Pensacola, Fla., has been named NAMRU-Dayton's first Executive Officer.

Together, this leadership team will execute the Base Realignment and Closure (BRAC)-directed move of NAMRL and solidify the new command's scientific core capabilities.

The activation of NAMRU-Dayton is the culmination of over five years of effort, resulting from the 2005 BRAC Commission decision to relocate NAMRL to WPAFB.

The original intent was to collocate NAMRL with the Air Force Human Performance Wing, leaving the

Environmental Health Effects Laboratory ([EHEL](#)) in place, and maintaining two separate detachments performing their respective missions. After an extensive business case analysis, the Navy Surgeon General determined that the operational medicine research mission would be

best supported by combining NAMRL and EHRL and forming a unified command, serving as a major part of the Joint Aeromedical Research Center of Excellence.

The synergy realized by combining the scientific and technical expertise in the fields of aerospace medicine and toxicological research will result in greater capabilities to support the warfighter and maintain operational readiness.

Navy Medicine's progressive thinking will pay dividends now and well into the 21st century with a variety of valuable contributions to the research and development enterprise.

In addition, the consolidation of administrative and overhead functions projected a significant cost savings and increased efficiencies in daily operations.

Navy Medicine's progressive thinking will pay dividends now and well into the 21st century with a variety of valuable contributions to the research and development enterprise.



The current Environmental Health Effects Laboratory, WPAFB.

NAMRL Develops New Spatial Disorientation Training Techniques



A MH-60S Seahawk provides an example of how a brownout can create degraded visual conditions. Picture from www.navy.mil (Released).

By Cmdr. Rita Simmons, NAMRL Officer in Charge

Dr. Frederick Patterson, Naval Aerospace Medical Research Laboratory (NAMRL) researcher and spatial disorientation (SD) expert, has been at the leading edge of a paradigm shift in the understanding of aviation spatial awareness (SA) and SD. Leveraging new discoveries on the mechanisms of spatial awareness, NAMRL has developed novel, cutting-edge multimedia training techniques for prevention of SD-related aviation mishaps. Several of these new techniques have been incorporated into training and curriculum models requested by Naval Air Systems Command (NAVAIR) and the Naval Survival Training Institute (NSTI) for use in aircrew physiology and survival training. The request followed the release of a recent Office of the Secretary of Defense study which stated that “80 percent of the U.S. military’s 320 rotorcraft crashes during the last decade have been caused by degraded visual conditions.”

NSTI is a component of the Naval Operational Medicine Institute based in Pensacola, Fla. NSTA consists of a

headquarters element and eight Aviation Survival Training Centers located at Patuxent River, Md.; Norfolk, Va.; Cherry Point, N.C.; Jacksonville and Pensacola, Fla.; Miramar and Lemoore, Cal.; and Whidbey Island, Wash.

Dr. Patterson proposed a brownout

training model to the NSTI team of directors tasked with reviewing the concepts that define NAMRL’s innovative approach to training. NSTI representatives unanimously accepted the new approach, launching a new direction for SD/SA training.

According to NAMRL Scientific Director Dr. Richard Arnold, when asked about the significance of this decision, “The decision marks a fundamental change and improvement with regard to how spatial and situational awareness teaching methods will be incorporated and presented to the fleet through the Navy and Marine Corps’ aeromedical safety programs. Acceptance of this new direction toward recognizing and preventing cognitive threats such as SD validates the research concepts NAMRL has been working on, in earnest, for the past three years.”

According to NAMRL researchers, the end result of this effort should be significant improvements in cockpit design that will lead to greater human/machine compatibility, decrease pilot workload, and improved margins of flight safety. The new training techniques will be incorporated into the NSTI training curricula in 2011.



A massive sandstorm cloud rolls over Al Asad, Iraq just before nightfall. U.S. Marine Corps photo by Cpl. Alicia M. Garcia.

Aerospace Medicine Lab and Training Wing SIX Fight Fatigue

Provided by NAMRL PAO



A NAMRL scientist calibrates a fatigue detection eye tracker for use in the upcoming TRAWING field test.

Human factors are at the root of over 80 percent of aviation mishaps, with pilot fatigue among the most prevalent causes. The Naval Aerospace Medical Research Laboratory ([NAMRL](#)), Pensacola, Fla., has taken another step forward in its work to understand and reduce fatigue among fleet aviators and aircrew. Leaders in Training Air Wing-6 (TRAWING SIX) and Training Squadron 10 (VT-10) have signed a letter of intent to work with NAMRL in the execution of a field investigation of fatigue among student flight officers. Drs. Richard D. Arnold and Joseph F. Chandler met with Wing leadership to describe NAMRL's recent

fatigue countermeasure research and solicit collaboration on follow-up field testing and validation of fatigue mitigation tools developed in previous studies. Recognizing the potential of the proposed research, NAMRL researchers have been granted unprecedented access to flight student research volunteers. This project has the potential to achieve immediate and long-term practical and theoretical progress in combating fatigue. The project also presents a unique opportunity to provide critical data to the TRAWING concerning student fatigue in the training pipeline. Data collection is scheduled to begin this fall.

Greetings from the NMRC Ombudsman!

I hope everyone had a wonderful, relaxing summer, and both kids and parents alike are eager to get back to school. Regardless of whether your child is starting kindergarten or college, it is important to make sure you and your student are prepared for school to avoid any unnecessary stress that comes with the start of a new school year. Maybe these tips can help in getting started:

- **Obtain school information.** Most schools host websites with information about policies, teacher links, homework and grading, lunch menus and the year's calendar.
- **Supplies.** Some schools send out lists prior to school starting. If so, stock up early. See if you have anything left over from last year.
- **Set aside time on the first day of school.** Talk to your children beforehand about whether they would like you to go with them. Work with their teachers.
- **Technology devices.** Almost every school has a policy for mobile devices and their use. Save yourself and your student any miscommunication by reviewing this policy before classes start, or no later than the first day of school.
- **Safety.** Create a plan in case of an emergency. Practice a safety word or code with younger children.
- **Establish limits and boundaries.** This is very useful, especially for teens. Discuss appropriate curfews and behavior. Talk about limits for debit or credit card use and expectations.
- **Parents of college-bound students.** Remember this is a rite of passage toward independence. Rely on the messages you have already shared throughout their life. Establish a time to communicate weekly or bi-weekly and give your child room to experience this new adventure.

Have a great and successful school year!

Free Online Fantasy Football Season Begins Sept. 12 – Register Now

Morale, Welfare and Recreation is participating in a free online fantasy football league. The participant with the top score at the end of the season will win a trip to Super Bowl XLV in Dallas, Texas. In addition, all participants will have a chance to win the national contest, with a grand prize of \$100,000! The contest is open to all active duty personnel, their family members, retirees, Reservist, National Guard, DoD and Coast Guard civilians. Registration and all drafts must be started by Sept. 12 at 8 a.m. EDT. Each player can field as many as 60 teams, each of which will draft and play a full season of fantasy football games against eleven Fantasy Football Professionals, including Joe Namath, MVP of Super Bowl III. For more information or to register, visit <http://www.armymwr.com/news/news.aspx?nid=280>

Military Spouses Invited to Participate in "Don't Ask Don't Tell" Survey

Coming Soon: Don't Ask Don't Tell Survey for military spouses. This month, 150,000 military spouses will receive a 'Don't Ask Don't Tell' survey. Spouses are asked to take the survey and return it; their participation is vital. Survey responses are due by Monday, September 27. Go to: <https://www.militaryonesource.com/MOS/About/Announcements.aspx> for more details.

If you need information on these or other resources, please contact me at angela.prouty@med.navy.mil or 217-722-4981.

Angela Prouty
Ombudsman, NMRC

Millennium Cohort Study Investigates Long-term Health Issues

By Beverly Sheppard, NHRC



MILLENNIUM COHORT STUDY

The Millennium Cohort Study was launched in the summer of 2001 using a prospective design to collect baseline and follow-up data to investigate occupational exposures including deployment and potential association with long-term health outcomes. A phased enrollment design and a population-based sampling of U.S. military personnel from all services ensured representation of active duty, Reserve, and National Guard members. Currently, the cohort includes over 151,000 participants and plans to enroll an additional 50,000 in 2010/2011. Study participants are requested to complete a questionnaire every three years for up to twenty-one years, regardless of military status.

The Millennium Cohort Family Study, which will consist of approximately 10,000 military spouses of which about half will be married to service members who have deployed in support of current operations, will be launched in 2010. This will be the first study to use a large prospective cohort design to evaluate impact of military service and deployment on the health and well being of service members, their spouses and co-resident children.

Current research areas include investigations differentiated by deployment focusing on post-traumatic stress disorder (PTSD) and other anxiety disorders; depression; chronic multisymptom illnesses; head trauma; respiratory illness; hearing loss; migraine headaches; unit cohesion; weight change; complementary and alternative medicine use; supplement use; physical activity; CHD and CVD; chronic back pain; parental stress and infant birth outcomes; and cause-specific mortality including suicide. Special populations have been of additional focus including healthcare workers, female deployers and individual augmentees.

Using data from the Millennium Cohort Study, researchers have been able to uniquely include active-duty, Reserve, and National Guard members from all services and conduct prospective comparisons of populations including nondeployed and deployed while differentiating between those who do and do not report combat exposures. Recently published papers have answered questions regarding mortality ascertainment (Hooper 2010); diabetes (Boyko 2010); cigarette smoking initiation and recidivism (Smith 2008); PTSD (Riddle 2007, Smith 2008, Smith 2008, LeardMann 2009, Smith 2009); depression (Riddle 2007, Wells 2010); func-

tional health (Smith 2007, LeardMann 2009); disordered eating and weight change (Jacobson 2009); complementary and alternative medicine use (Jacobson 2009); hypertension (Grando 2009); and newly reported respiratory symptoms and conditions (Smith 2009). A recent overview manuscript published in the *Journal of Occupational and Environmental Medicine* provides a detailed description of the cohort's overall design and methodologies (Smith 2009).

With about half of the cohort deploying in support of the combat operations in Iraq and Afghanistan, these studies are well positioned to investigate and frame any long-term health outcomes related to military service and potential impact on family members and family functioning.

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